The Impact of the Non-life Insurance Penetration on the Economic Growth of
Developing Countries: Panel Data Analysis

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Abstract

Purpose: This study explores the impact of non-life insurance industry performance on economic growth in 10 developing countries (Australia, Austria, Canada, Denmark, Finland, France, Italy, Luxembourg, Norway, and Portugal).

Methodology: Insurance penetration is measured through proxy such as non-life insurance with the time-series statistics covering the period from 1990 to 2021. The ordinary least square regression was adopted for the testing of the hypotheses. The results are based on panel data models and panel cointegration.
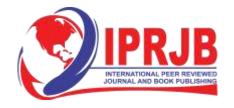
Findings: The outcomes of the study showed that non-life insurance penetration had a substantially positive effect on the economic growth in 10 developing countries during the period from 1990 to 2021. The results based on panel data models and panel cointegration suggests that Non-life insurance has a positive and significant effect on the economic growth of the chosen countries. Also, it shows that the application of the rule of law had a positive effect on the developing economies. On the other hand, the higher the level of education, the more people are aware of the application of non-life insurance, which positively affects economic growth. Furthermore, culture and population density have a positive impact on economic growth.

Unique Contribution to Theory, Practice and Policy: The study recommends an improved modification in insurance products, especially in non-life businesses to availing clients the chance of choosing from a diversity of products. The study, therefore, recommends an increase in the awareness of non-life insurance services for its impact to be felt at all levels and to encourage participation.

Keywords: *Non-Life Insurance, Economic Growth, Insurance Penetration*
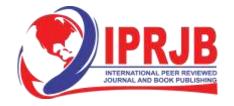
JEL Classification: *G22, O42*

INTRODUCTION

The finance-real sector growth nexus debate continues unabated. However it has largely focused on either the banking sector or the stock market and scant research has been conducted to unravel the relationship between the insurance sector and the real sector. It is imperative to highlight that the insurance sector plays a critical role to any economy by its very mechanism of either providing indemnity or that of promoting savings. Moreover its ability to pool funds in the form of premiums enables it to be an important institutional investor. The present study aims to contribute to the finance-growth nexus literature by specifically focusing on the insurance sector in the context of 10 developing countries.

A strong financial market is essential for sustainable and robust economic growth. In recent times, the insurance activity had shown an implausible increase which had an expressively valuable effect on the economic growth of several countries globally (Outreville, 2011; 2013). According to Avram, Nguyen and Skully (2010) and SwissRe (2015), total global insurance premiums have increased from \$467 billion to \$3,426 billion and \$3,732 billion in 1980, 2005 and 2006 respectively which amounts to approximately, 58% and 42% life and non-life insurance. All over the world, the role of insurance companies cannot be under-estimated. It provides robust financial services that boost growth and progress in the country (Olulekan and Akinlo, 2013; Adeniyi, Adeyinka and Iyodo, 2019). Its services that influence growth in the country include the deployment of a colossal sum of funds by means of premiums for short- and long-term investment for development and underwriting of risk in economic entities. It also encourages financial reliability and confidence in the financial market and offers a sense of harmony to economic entities which in the long run.

Most countries especially the rural dwellers are ignorant of significant of the insurance industry. The part played by the insurance sector in easing sudden and ruinous occurrences thereby invigorating economic growth cannot be overemphasised (Guochen, 2012; Lee et al., 2016). Among its benefits, one of which is that it allows the insured to stabilize their income every time a negating event happens, or on the state in which such an incident does not take place, and this is done through the fee of premium and the receiving of compensation (Indemnity), in the case of misfortune (Seyed, et al., 2010; Olulekan, and Akinlo, 2013).

All these events impact promoting economic progress, and so provide the rationale for this study, the impact of non-life insurance penetration on the economic growth of the chosen countries basically, insurance companies offer various sorts of products, however, it was largely agreed to categorize those services into two main groups: the life and the non-life insurance. The life insurance is the promise to compensate the beneficiary of the insured with certain sum of money upon his/her death, while the non-life insurance is not related to life but to property such as theft, motor vehicle insurance, marine insurance, property liability insurance, among others. The two groups of insurance products have diverse portions in risk management and indemnification, this study explores the impact of non-life insurance infiltration on the economic growth of 10 developing countries.

The countries selected for investigation are from the same area (Europe), are subject to common and converging regulation and strongly connected to each other as EU members. As insurance companies are relatively more important as institutional investors in Europe than in the US for example where pension and mutual funds dominate, it also makes sense to concentrate on the European setting. Also, the choice of 10 countries to test the hypothesis of

our study, namely the impact of non-life insurance penetration on economic growth in developing countries, is due to the availability of data.

The following hypothesis was formulated to answer the above question: Non- life insurance penetration does not have a positive and significant impact on economic growth in developing countries. For proper analysis, a period of 31 years (1990-2021) was reviewed to address the above examinable hypothesis. This study is significant because it provides information on the relationships between the insurance activity and the economic growth in developing countries, the performance and efficiency of the insurance industry which would be of great benefit to policymakers, insurers, economic watchers and the public, researchers and students.
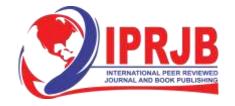
Even though the potential contribution of the insurance market activity on economic growth has been recognized, the assessment of a potential causal relationship between insurance market activity and economic growth has not been as extensively studied as that of banks. This reflects both data availability and the rather arcane reputation of the sector in economic circles. In this context, the purpose of the present paper is to provide a systematic assessment of the causal effect of insurance market activity on economic growth, taking into account the effects that non-life insurance could have due to the different benefits that they provide to households and corporations.

LITERATURE REVIEW

Despite the critical role that the insurance sector plays for financial and economic development and reasonable evidence that the sector has promoted economic growth, there have been few studies examining the factors that drive the development of the insurance sector. Moreover the bulk of the existing empirical research focuses on the growth of the life insurance sector, using the most frequently cited papers [Beck and Webb 2003; Browne and Kim 1993; Outreville 1996; Li et al. 2007]. The dependent variables for the vast majority of models was the life insurance density (number of US Dollars spent annually on life insurance per capita) and the life insurance penetration (total life premium volume divided by GDP).

Explanatory variables that have been shown to significantly impact life insurance demand are GDP per capita, inflation (real, anticipated or feared), development of the banking sector, institutional indicators (such as investor protection, contract enforcement, and political stability). Variables that appear to have a borderline impact include education, old and/or young dependency ratio (ratio of the population above the age of 65, or below 15, to 23 the number of persons aged 15 to 64), urbanization, size of the social security system, life expectancy, and market structure. Sherden [1984] was first to focus on the sensitivity of non life insurance purchase. In a cross-sectional analysis of consumption patterns limited to automobile insurance in 359 townships in the state of Massachusetts in 1979, Sherden [1984] finds that the demand for the three coverages was generally inelastic with respect to price and income, that the demand for comprehensive and collision coverages was price-elastic at prices 1.6 times the state average price, and that the demand for comprehensive and collision coverages increased substantially from areas of low density to areas of moderate density. In the absence of other means of transportation, the automobile is a virtual necessity for many people.

Recently, the study of Zbar, S. A., & Ibrahim, H. K. (2024) showed that insurance information technology contributed to reducing the effects of climate change risks on affected groups, especially the agricultural sector. It will enable it to monitor climate fluctuations and determine the amount of premiums and compensation more accurately and quickly. Beenstock, Dickinson, and Khajuria [1988] using an international dataset (12 countries over a period of 12
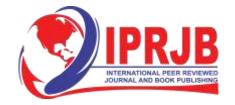
years) to examine the relationship between property liability insurance premiums and income, found that marginal propensity to insure i.e., increase in insurance spending when income rises by 1$, differs from country to country and premiums vary directly with real rates of interest. Again the decision of consumer and his/her initial wealth status are significant factors also when shortrun or longrun consumption of insurance is considered. Based on a cross-sectional logarithmic model of non-life insurance penetration of 55 developing countries, Outreville [1990] confirms the Beenstock, Dickinson, and Khajuria [1988] main result of an income elasticity greater than unity. The level of financial development is the only other factor found to significantly impact non-life insurance consumption. Browne, Chung, and Frees [2000] study 22 OECD countries from 1987 through 1993 and focus on the premium density of two lines of insurance: motor vehicle (usually purchased by households) and general liability (normally bought by businesses). Panel data analysis demonstrates that income (GDP per capita), wealth, foreign firms' market share, and the form of legal system (civil law or common law) are significant factors to explain the purchase of the two types of insurance. Per capita income has a much greater impact on motor insurance than on general liability.

Studies that examined the relationship between insurance and economic growth can be counted on fingers. The study of Ward and Zurbruegg (2000) is considered to be the first that explored the relationship between insurance and economic growth for OECD countries. They measured insurance through total insurance premium proxy and apply Granger Causality to study demand or supply following relationship between insurance and economic growth. The results revealed that in some OECD countries economic growth Granger Cause insurance demand and the reverse is true for others. It is important to mention here that authors found an insignificant relationship for two OECD countries namely UK and USA. Kugler and Ofoghi (2005) also investigated the relationship between insurance and economic growth using disaggregated data. They found a significant and a positive relationship between insurance and economic growth for the UK. They argued that an insignificant result of Ward and Zurbruegg (2000) was due to use of aggregate data (life plus non-life insurance premiums)

Webb, et. al (2002) examine the causal relationship of banks, life, and non-life insurance activity on economic growth in the context of a revised Solow-Swan neoclassical of economic growth model, where the authors include financial activities (bank, life and non-life insurance) as an additional input in the production function assumed to be a Cobb-Douglas type. The empirical specification falls in the context of the cross-country economic growth regressions literature (Sala-i-Martin, 1995), where the growth rate of real GDP per capita is regressed against the change in capital intensity (gross domestic investment), human capital (education enrollment), the ratio of government consumption to GDP, the degree of openness (the ratio of exports to GDP), the initial level of GDP per capita, and measures of financial intermediary activity (the ratio of bank credit to GDP, the ratio of non-life insurance premiums to GDP, and the ratio of life insurance premiums to GDP). For the estimation, the authors use the three-stage-least-squares instrumental variable approach (3SLS-IV), where the instruments used are the legal origin of the country (English, French, German, Scandinavian, or Socialist) for the banking measure, a measure of corruption and quality of the bureaucracy for the non-life insurance measure, and the religious composition of the country (Catholic, Muslim, or Protestant) for the life insurance measure. In order to assess a causal relationship with economic growth, the authors use average levels the explanatory variables. Among the main findings, the authors show that the exogenous components of the banking and life insurance measures are found to be robustly predictive of increased economic growth. However, these measures are
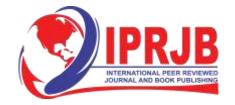
not significant in the presence of interaction terms between banking and life insurance, and between banking and non-life insurance; when these interaction terms are included, the individual variables loss explanatory power.

Tong (2008) conducted a study to explore the relationship between insurance and economic growth for US, Germany, Sweden and South Korea. He utilised OLS, Fixed Effect and simultaneous equation modelling to investigate this relationship. He found life insurance has a significant and positive effect on economic growth for US, South Korea. However, the said relationship is negative in case of Sweden and Germany. The author claimed that as the government provides social benefits similar to life insurance, therefore, life insurance industry in European countries is not significantly contributing to the economy. On the other hand, non-life insurance has a significant and positive effect on economic growth for US, Germany, Sweden and South Korea.

It is important to mention here that Tong (2008) measured insurance activity using total insurance premiums as a proxy for Europe, whereas, Kjosevski (2011) utilise insurance penetration to measure insurance activity for Macedonia. Later on, Ćurak, Lončar, and Poposki (2009) apply fixed effect panel data test to again investigate the above-mentioned relationship for the 10 transitional countries over the period of 1992–2007. Authors established an argument, unlike the previous study where only life insurance promoting the economic growth, that insurance industry as a whole, life and non-life insurance all promotes economic growth for transitional countries. Similarly, Han et al. (2010) also explore the relationship between insurance and economic growth for 77 countries over the period of 1995–2004 using generalised methods of moments (GMM). The result supported the findings of Ćurak et al. (2009) that aggregate, non-life and life insurance have a much significant effect on economic growth for developing countries as compared to developed.

Esho et al. [2004] also include one of Hofstede's dimensions, Uncertainty Avoidance, as a proxy for risk aversion. They find a marginally positive relationship and conclude that culture does not seem to play an important role in non-life insurance demand. Based on a analysis of 5 countries (Bosnia and Herzegovina, Croatia, Macedonia, Serbia and Slovenia) Njegomir, Stojić, and Marković [2011]analyzed the performance in the non-life insurance industry for the period 2004–2008. They used three models for capturing influences of market structure and liberalization on market profitability. Firstly, market structure, liberalization and performance are put in relation to the strength of economy and corresponding rate of return, model 2 connects the former with the number of competitors and their dominant line of insurance, whilst in model 3 they used the threat of substitutes as a control variable. The research results of all three models show support for the S-C-P hypothesis. Their results are important for governments that wish to achieve affordable and available insurance for all. Governments interfere in insurance markets by pro-competitive and pro-liberalizing policies. Their research results could provide insurance companies with a useful comparison across different national markets throughout the ex-Yugoslavia region, thus enabling them to formulate optimal competitive strategies. The research of Njegomir and Stojić [2012] examines factors that affect the attractiveness of the Eastern European non-life insurance market for foreign insurers for the period 2004–2009. The region encompasses non-life insurance industries in 15 countries: Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia, Slovenia, Hungary, Czech Republic, Slovakia, Romania, Bulgaria, Poland, Lithuania, Latvia and Estonia. The research results indicate that the main forces affecting market attractiveness are insurance demand, entry barriers, market concentration and the return on investment and only market concentration has
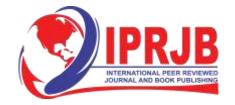
negative impact. Poposki and Kjosevski [2013] used an international dataset (16 countries from Central and South-Eastern Europe (CSEE) over the period of 1998–2010 years) to identify determinants of the demand of non-life insurance. They used a fixed-effects panel model. As a measure for demand for non-life insurance they used non-life insurance penetration and non-life insurance density. Their results show that GDP per capita, number of passenger cars, gini coefficients, level of education and rule of law are the most robust predictors of the use of non-life insurance. Private credit, inflation, trade, population density, control of corruption and government effectiveness do not appear to be strongly associated with non-life insurance demand.

Chi-Wei, Hsu-Ling and Guochen (2013) applied the bootstrap Granger causality test to examine the relationship between insurance development and economic growth in 7 Middle Eastern countries. They used insurance density as the indicator for insurance development. They found evidence for bi-directional causality between the life insurance sector and economic growth in the higher income countries such as United Arab Emirates, Kuwait and Israel. They also found that economic growth Granger causes non life insurance development in the low income countries of Oman, Jordan and Saudi Arabia.

The study concluded non-life insurance as the stronger and significant contributor in the economic progress as compared to life insurance. The result also disclosed that insurance as a whole plays a more significant role in emerging countries as compared to developed economies. Mohy ul din et al., (2017) adopted ARDL method on a group of countries during 1980 to 2015 and recognized the positive association among "non-life insurance" and growth of the economy. But for life insurance the results were mixed, both positive and negative for sample countries. For Macedonia, Kjosevski (2011) scanned the association for insurance parameters and economic progress, outcomes of the study emphasized that total insurance penetration and "non-life insurance penetration" have a favorable and significant influence on economic progress of Macedonia. In India Ghosh (2013) investigated the same association only for life-insurance, using VAR-VECM model.

In addition, Ward and Zurbruegg (2000), Hussels, Ward and Zurbruegg (2005) and Arena (2008) investigated how insurance (both life and non-life) promotes growth in an economy. The outcome of the studies further confirms a positive impact between the two variables. Arena (2008) investigation was based on looking at the relationship between 56 established and emerging countries using data from 1976 to 2008 whereas the Ward and Zurbruegg (2000) were based on OECD nations. In addition to Ward and Zurbruegg (2000), Browne, Chung and Frees (2000), used a pooled cross-sectional panel model approach to examine the link between a general liability insurance and motor vehicle insurance in the OECD nations over the 1986-1996 period. They regressed liability insurance consumption on a diversity of factors, as well as the legal system, wealth and income. Browne, Chung and Frees (2000) argued that income influence insurance consumption. Relationship with risk aversion was statistically unimportant for motor vehicle insurance consumption and adversely related general liability insurance consumption.

Similarly, Haiss and Sumegi (2008) examined the theoretical and empirical characteristics of the relationship between insurance and economic growth in 29 European nations. Using the regression analysis and panel data from the period 1992 to 2005, the study revealed that insurance influences the economic growth of nations positively, however, non-life insurance has more impact.

Since, the impact of non life insurance market activity on economic growth has not been studied as extensively as the role of the banking sector and the stock market. In this context, the main task of our paper is to assess whether insurance market activity influences economic growth distinguishing the particular effects of non-life insurance activity.

Theories of Insurance and Economic Growth

Theoretical studies and empirical evidence have shown that countries with better developed financial systems enjoy faster and more stable long-run growth Well-developed financial markets have a significant positive impact on total factor productivity, which translates into higher long-run growth. Arena (2006) and Beckand Levine (2004) provide recent empirical evidence for the bank/stock market-economic growth relationship. We can show in this paper that a similar positive relationship holds for insurance in developing countries over the period from 1990 to 2021. The role of the financial sector is to channel resources from savers to investment projects and vice versa. The financial sector (1) improves the screening of fund seekers and the monitoring of the recipients of funds, thus improving resource allocation; (2) mobilises savings; (3) lowers the cost of capital via economies of scale and specialisation; and (4) provides risk management and liquidity (Wachtel2001; Scholtens and van Wensveen 2003). Insurance companies provide services and/or carry out these activities mainly as providers of risk transfer and as investors.

Following Eller et al.(2006), Fink et al. (2005) and Webb et al. (2002), we adopt an endogenous growth model with a modified Cobb-Douglas production function assuming constant returns to scale and perfect competition:

$$\mathbf{Y} = e^{\gamma A + \gamma INS} \, K^{\propto} \, H^{\beta} \, L^{1-\propto-\beta} \qquad\qquad (1)$$
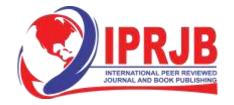
Where Y represents the output (real GDP), $e^{\gamma A + \gamma INS}$ denotes technological progress split into a constant value and a part induced by insurance services, K resembles the physical capital, H stands for human capital and finally L is the used labour force.

METHODOLOGY

As in Webb et al., this paper evaluates the effect of non-insurance penetration on economic growth within the context of the standard growth regressions specification. The general regression equation to be estimated is the following (1) $y_{i,t} = \beta' X_{i,t} + \mu_t + \eta_i + \xi_{i,t}$ where the subscripts i,t represent country and time period, respectively. y is the dependent variable of interest, that is, economic growth. X is a set of time- and country-varying explanatory variables, proxies of banking, stock market and insurance market development, interaction terms, and control variables, while β is the vector of coefficients to be estimated. Finally, μ_t is an unobserved time-specific effect, η_i is an unobserved country specific effect, and ξ is the error term.

In theoretical models of non-life insurance demand, starting from the seminal papers of [Pratt 1964; Arrow 1971; Mossin 1968], predict that for a given level, Penetration indicates the level of development of insurance sector in a country. Penetration is measured as the ratio of premium underwritten in a particular year to GDP. Within insurance there is life insurance penetration which considers premiums from life insurance policies only as a percentage of GDP and non life insurance penetration which considers premiums from other than life insurance policies such as auto insurance, health insurance, etc.

Whether the propensity to insure – i.e., the desired coverage as a percentage of the wealth at stake – should increase or not, depends on the behavior of risk aversion: Arrow [1971] shows

that it increases if people are characterized by increasing relative risk aversion. Most of the above authors have commented on the elasticity of insurance consumption with respect to income and wealth in the light of the long-standing debate on insurance as an inferior good.

Mossin [1968] first delineated the conditions for this to happen: the intuition is that if the utility function is characterized by decreasing absolute risk aversion, then a higher endowment of wealth reduces risk aversion and therefore the demand for insurance. Moreover whilst by Mossin's Theorem full coverage is optimal under the fair actuarial price, the degree of coverage decreases with the loadings – Schlesinger [2000]. The so-called "inverted economic cycle" of insurance in which one pays first then, in the event of loss, receives his dues, suggests that the financial rate of return, seen as an opportunity cost for those who allocate funds in an insurance policy, should be inversely related to demand. That is self-insuring gives an opportunity-gain to invest the amount of the premium saved on financial markets, which increases along with the prevailing rate of return. However, Falciglia [1980] shows that higher market interest rates should lower insurance demand only if consumers have a decreasing risk aversion and are net savers; although these conditions seem reasonable, the relationship between interest rates and insurance demand nevertheless remains an empirical question.
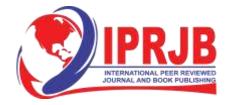
Model Specification

This study is mainly quantitative and builds on existing studies and methodologies. The analytical procedures adopted in this study to test the hypothesis are as follows: multiple regression models, descriptive statistics, unit root test and ordinary least squares. The above methods are used mainly to avoid some challenges which include the issue of subjecting and bias of responses and relationships between variables. In this study, the model is detailed in line with the works of Oke (2012), Curak, Loncar and Poposki (2009), ward and Zurbruegg (2000), Kugler and Ofoghi (2005). In the analysis of insurance sector development and economic growth using a modified model used by Curak, Loncar and Poposki (2009), the study used the Gross domestic product growth rate (GDP) at the market price as the dependent variable and for the explanatory variables, and by adding the following to the explanatory variables: Non-life Insurance penetration, rule of law, population density, education level and Christian rate with their time series data covering the period between 1990 and 2021. Therefore, the model for this study, given the stated hypothesis can be specified as thus: Non-life insurance business have a significant positive effect on the developing economic growth countries;

Introducing other control variables, we have:

L(GDP/ per capita) $_{i,t}$ = β_0 +β_1L(non-life insurance penetration)it + β_2L(rule of law)it + β_3L(population density)it + β_4L(education level)it + β_5L(Christian rate)it + uit (2)

L(GDPC) $_{i,t}$ = β_0 +β_1L(NLIP)it + β_2L(RL)it + β_3L(POP)it + β_4L(EDUC)it + β_5(CHRIS)it + uit (3)

Where: β is a coefficient that should be an estimate, uit is a scalar disturbance term, i is indexes a country in a cross section, t is indexes time measured in years. Based on the established model we will estimate the effect of non insurance penetration on economic growth in 10 developing countries in the period (1990-2021).

The Gross Domestic Product Growth Rate (GDPC) refers to the percentage change in a country's gross domestic product (GDP) when compared with the previous or the preceding year. It is significant for this study because it has been able to take care of the supposed effects of other economic variables beginning with the inflation rate. Non-life Insurance Penetration (NLIP) is an Insurance business that does not deal with life. Using Beenstock, Dickinson and Khajuria (1988) and Outreville (1990) and this study adopt the total non-life premium. The direction and robustness of the analysis of the study would be determined through the unit root tests.
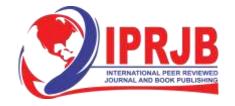
Panel Unit Root Test

To formulate an econometrics model it is important to know whether the data generating process of variables is based on a stationary process or not. In the presence of non-stationary properties of standard estimation are not valid. In addition it might cause problem of spurious regression Verbeek [2004]. To avoid the problem which may arise because of the existence of non stationary variables one might have to identify the order of integration of variables. Although several methods have been proposed by considering different assumptions there is no uniformly powerful test for unit root. However, it has been widely acknowledged that standard unit root tests can have a low value against stationary alternatives for important cases [Campbell and Perron 1991]. As an alternative the recently developed panel unit root is applied. In this paper, we test for stationarity of the panel using a Maddala and Wu panel unit root test for unbalanced panels. Maddala and Wu [1999] proposed a Fisher-type test which combines the p-values from unit root tests for each cross-section i. The test is non-parametric and has a chi-square distribution with 2n degrees of freedom where n is the number of countries in the panel. They state that not only does this test perform best compared to other tests for unit roots in panel data but it also has the advantage that it does not re quire a balanced panel, as do most tests.

Panel Cointegration Test

The concept of cointegration has been widely used in literature to test the presence of long-run relationships amongst variables. Similar to individual unit root tests, cointegration tests in time series literature suffer from low value when the time horizon is short. Panel techniques may be better in detecting cointegration relationships since a pooled levels regression combines cross-sectional and time series information in the data when estimating cointegrating coefficients proposed panel cointegration tests similar to the Engle and Granger [1987] framework which include testing the stationarity of the residuals from a levels regression.

Empirical Results

Table 1 below presents the descriptive statistics result and regression analysis result carried out on the hypothesis earlier formulated for the study.

Table 1: Descriptive Statistics Result

Year	LGDPC	LNLIP	LRL	LPOP	LEDUC	LCHRIS
Mean	2.532615	4.576341	4.002638	5.872311	2.562389	1.258974
Median	2.536241	4.258923	2.452130	4.750317	0.780317	4.098362
Maximum	0.524321	4.887562	3.569810	3.889661	5.021361	5.238961
Minimum	1.998623	1.254852	1.542312	0.985423	2.213045	3.251401
Std.Dev	0.666952	0.895623	1.123520	0.798523	0.968541	0.865423
Skewness	0.196235	0.564213	0.882145	0.775241	0.985521	0.963212
Kurtosis	2.554321	2.896544	2.457896	1.758215	2.442153	2.879412
Jarque-Bera	2.886321	2.852123	1.798652	1.987526	1.865421	2.776623
Probability	0.000000	0.225623	0.465283	0.345628	1.963212	0.358921
Sum	120.3251	160.4523	80.2531	72.5412	109.8213	12.85462
Sum Sq.Dev	2.576985	16.52013	18.452378	19.15243	9.896321	10.452987
Observations	310	310	310	310	310	310

Source: Authors' Compilation

For Non- life insurance penetration (NLIP), the mean within is 4.5763 while the medium value was 4.2589. Non-life Life insurance penetration in DC is highest in 2021 when the value is 4.8575 while the year with the minimum life insurance penetration was in 1990 when the value was 1.2548. As uncovered by the skewness (0.5642) of Non-life insurance penetration signifying that the extent of departure from the mean of the distribution is positive showing that in general, there was a steady increase in non-life insurance activities/penetration from 1990 to 2021. The Jarque-Bera statistic which shows the normality of distributions is 2.8521 and since the probability of 0.2256 (22%) is greater than 5% significant level, the distribution is normally distributed. The JB criteria is to reject the null or any value above 0.05 which implies accepting the alternate, there is, normality is found in the data (Jarque and Bera, 1980).
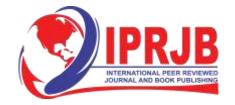
Table 2: Regression Resut*

Variables	Coefficient	Standard Error	t-Statistics	Prob
LNLIP	9.552112	0.532641	5.9213	0.00
LRL	5.532461	0.231586	4.2212	0.02
LPOP	4.072135	4.562315	1.2253	0.03
LEDUC	8.523564	5.689211	0.5724	0.08
LCHRIS	10.54289	10.89213	8.2456	0.09
C	210.2521	196.5241	9.5263	0.00
R^2 =0.9231; SIC=24.6893	AR^2 =0.9742; F-Stat=153.2612	DW=1.9231; Prob(F-Stat)=0.0000	AIC=24.5172	

*dependent variable = LGDPC

L(GDPC) i,t = β$_0$ +β$_1$L(NLIP)it + β$_2$L(RL)it + β$_3$L(POP)it + β$_4$L(EDUC)it + β$_5$L(CHRIS)it + uit (1)

L(GDPC) i,t = 210.2521 +9.552112L(NLIP)it + 5.532461L(RL)it + 4.072135L(POP)it + 8.523564L(EDUC)it + 10.89213(CHRIS)it + uit (2)

The Table 2 above shows the outcome of the regression analysis of the study from 1990 to 2021. The result reveals that the model for our study is fit (F-statistic =153.2612) with a probability of 0.00000. The coefficient of determination (R^2), which gauges the goodness of fit of the model, shows that the explanatory variables described 92% of the differences observed in the dependent variable. This was regulated by the Adjusted R2 to 97%, demonstrating that there are other variables excluding the regressors that might likewise
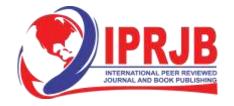
influence the dependent variable. The result shows that the non-life insurance penetration (NLIP) has a positive and substantial impact on the GDPC of the chosen countries (LNLIP coefficient = 9.55, p = 0.00 < 0.05, t-value = 5.92). The control variable, rule of law (LRL), has positive but significant impact on LGDPC (LRLcoefficient = 5.53, p = 0.02 < 0.05, t-value = 4.22). Also, LPOP had a positive and significant impact on LGDPC (LPOP coefficient = 4.07, p = 0.03 < 0.05, t-value = 1.22).Likewise, LEDUC had a positive and significant impact on LGDPC (LCHRI coefficient = 8.52, p = 0.08 < 0.1, t-value = 0.57); also, LCHRI had a positive and significant impact on LGDPC (LCHRI coefficient = 10.54, p = 0.09 < 0.1, t-value = 8.24) .It is obvious from the result above that the null hypothesis is accepted and the alternate is rejected which specifies that non-life insurance penetration had a positive and significant impact on economic growth in 10 developing countries such as (Australia, Austria, Canada, Denmark, Finland, France, Italy, Luxembourg, Norway, and Portugal).

CONCLUSION AND RECOMMENDATIONS

There is no reservation that the role of insurance which is summarized as intermediation, indemnification and risk transfer in an economy with regards to economic growth and development cannot be played down and at the same time, underestimated. No-life insurance premiums secure the lives and future of the people. It helped bring financial stability and promote economic development directly and indirectly in many nations including Nigeria. However, the role differs for diverse economic levels and principally depends on proxies used in gauging the insurance activity. This study examines the effect of non-life insurance penetration on the economic growth in 10 countries (Australia, Austria, Canada, Denmark, Finland, France, Italy, Luxembourg, Norway, and Portugal) between 1990 to 2021 using non-life insurance penetration as a proxy. Results revealed that Non-life insurance has a positive and significant effect on the economic growth of the chosen countries. Also, it shows that the application of the rule of law had a positive effect on the developing economies. On the other hand, the higher the level of education, the more people are aware of the application of non-life insurance, which positively affects economic growth. Furthermore, culture and population density have a positive impact on economic growth.

The positive and substantial impact of non-life insurance penetration on economic growth as revealed in the result submits that there has been an upward movement and advancement of nonlife insurance penetration in developing countries. The study, therefore, recommends that more awareness should be created to boost the involvement of the product industry and firms as this will expand the activities of the insurance industry in developing countries. Also, this study recommends an increased diversification of insurance products, especially in non-life businesses. The insurers should come up with new non-life products and adjustment of existing insurance products, thus availing customers the opportunity of choosing from a variety of products. There is also need for the insurance companies to take advantage of the non-life insurance products made compulsory by law to substantially increase their premium income and increase insurance penetration in the economy as this will foster economic growth in developing countries.

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